

AWARD/CONTRACT		1. THIS CONTRACT IS A RATED ORDER UNDER DPAS (15 CFR 350)		RATING	PAGE OF PAGES
2. CONTRACT (Proc. Ident. Ident.) No. N00014-04-0	2. EFFECTIVE DATE See Box 20C	4. REQUISITION/PURCHASE REQUEST/PROJECT NO. 04PR03395-00		DO-08 (U)	1 / 16
5. ISSUED BY CODE OFFICE OF NAVAL RESEARCH ONR 025 Email: greenj@onr.navy.mil BALLSTON TOWER ONE 800 NORTH QUINCY STREET ARLINGTON, VA 22217-5680	N00014	8. ADMINISTERED BY (if other than Item 5) DCM BOSTON 495 SUMMER STREET BOSTON, MA 02210-2138		CODE	S02208A
7. NAME AND ADDRESS OF CONTRACTOR (No., street, city, county, State and ZIP Code.)		6. DELIVERY <input type="checkbox"/> FOB ORIGIN <input type="checkbox"/> OTHER (See below) See SECTION F of Schedule			
CODE 11X2		9. DISCOUNT FOR PROMPT PAYMENT N.A.			
11. SHIP TO/MARK FOR CODE OFFICE OF NAVAL RESEARCH ATTN: DR. CHARLES LOEFFLER, ONR 32CM 800 NORTH QUINCY STREET ARLINGTON, VA 22217-5680		FACILITY CODE N00014		10. SUBMIT INVOICES (4 copies unless otherwise specified) TO THE ADDRESS SHOWN IN ITEM SEE SECTION G OF SCHEDULE	
12. PAYMENT WILL BE MADE BY DFAS COLUMBUS CENTER DFAS CO NORTH ENTITLEMENT OPERATIONS PO BOX 182266 COLUMBUS, OH 43218-2266		CODE HQ0337			
13. AUTHORITY FOR USING OTHER THAN FULL AND OPEN COMPETITION: <input type="checkbox"/> 10 U.S.C. 2304(c) <input type="checkbox"/> N/A <input type="checkbox"/> 41 U.S.C. 253(a) <input type="checkbox"/>		14. ACCOUNTING AND APPROPRIATION DATA See Attached Financial Accounting Data Sheet(s)			
15A. ITEM NO.	15B. SUPPLIES/SERVICES	15C. QUANTITY	15D. UNIT	15E. UNIT PRICE	15F. AMOUNT
See SECTION B of Schedule					
15G. TOTAL AMOUNT OF CONTRACT					See SECTION B of Schedule
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CONTRACTING OFFICER WILL COMPLETE ITEM 17 OR 18 AS APPLICABLE					
17. <input checked="" type="checkbox"/> CONTRACTOR'S NEGOTIATED AGREEMENT (Contractor is required to sign this document and return 2 copies to issuing office.) Contractor agrees to furnish and deliver all items or perform all the services set forth or otherwise identified above and on any continuation sheets for the consideration stated herein. The rights and obligations of the parties to this contract shall be subject to and governed by the following documents: (a) this award/contract, (b) the solicitation, if any, and (c) such provisions, representations, certifications, and specifications, as are attached or incorporated by reference herein. (Attachments are listed herein.)			18. <input type="checkbox"/> AWARD (Contractor is not required to sign this document.) Your offer on Solicitation Number _____ including the additions or changes made by you which additions or changes are set forth in full above, is hereby accepted as to the items listed above and on any continuation sheets. This award consummates the contract which consists of the following documents: (a) the Government's solicitation and your offer, and (b) this award/contract. No further contractual document is necessary.		
19A. NAME AND TITLE OF SIGNER (Type or print)			20A. NAME OF CONTRACTING OFFICER		
19B. NAME OF CONTRACTOR			20B. UNITED STATES OF AMERICA		
BY _____			BY _____		
19C. DATE SIGNED 3/30/04			20C. DATE SIGNED 1 APRIL 2004		

SECTION B - SUPPLIES OR SERVICES AND PRICES/COSTS

ITEM NO.	SUPPLIES/SERVICES	ESTIMATED COST	FIXED FEE	TOTAL ESTIMATED COST & FIXED FEE
0001	The Contractor shall furnish the necessary personnel and facilities to conduct the research effort as described in Section C and provide reports and data in accordance with Exhibit A.			
	000101 ACRN: AA [REDACTED]			
0002	Deliverable: Sensor Survey Platform			NSP
0003	Deliverable: Supplemental Propulsion and Energy Package			NSP
TOTAL ESTIMATED CONTRACT CONSIDERATION:				

SECTION C - DESCRIPTION/SPECIFICATIONS/WORK STATEMENT

1. The research effort to be performed hereunder shall be subject to the requirements and standards contained in Exhibit A and the following paragraph(s).
2. The Contractor shall conduct the research effort under CLIN 0001 in accordance with Attachment Number 1, entitled "Statement of Work."

SECTION D - PACKAGING AND MARKING

Preservation, packaging, packing and marking of all deliverable contract line items shall conform to normal commercial packing standards to assure safe delivery at destination.

SECTION E - INSPECTION AND ACCEPTANCE


Inspection and acceptance of the final delivery under this contract will be accomplished by the Program Officer designated in Section F of this contract, who shall have thirty (30) days after contractual delivery for acceptance.

SECTION F - DELIVERIES OR PERFORMANCE

1. The research effort performed under CLIN 0001 shall be conducted from date of contract award through 31 Dec 2006.
2. CLINs 0002 and 0003 are to be delivered no later than 31 Dec 2006. Delivery instructions will be given by the ONR Program Officer at a later date.

3. Distribution, consignment and marking instructions for contract line item 0001 shall be in accordance with Enclosure Number 1 of Exhibit A. The address for the cognizant Program Officer is as follows:

Program Officer
Office of Naval Research
Ballston Tower One
800 North Quincy Street
Arlington, Virginia 22217-5660



SECTION G - CONTRACT ADMINISTRATION DATA

1. PAYMENT AND INVOICE INSTRUCTIONS (COST REIMBURSEMENT)

1.1 Submission of Invoices

(a) "Invoice" as used in this clause includes contractor requests for interim payments using public vouchers (SF 1034).

(b) The Contractor shall submit invoices and any necessary supporting documentation, in an original and 4 copies, to the contract auditor* at the following address:

Defense Contract Audit Agency
Boston Branch Office
101 Merrimac Street, Suite 820A
Boston, MA 02114

unless delivery orders are applicable, in which case invoices will be segregated by individual order and submitted to the address specified in the order. In addition, an information copy shall be submitted to the Program Officer identified in Section F.

Following verification, the contract auditor* will forward the invoice to the designated payment office for payment in the amount determined to be owing, in accordance with the applicable payment (and fee) clause(s) of this contract.

(c) Invoices requesting interim payments shall be submitted no more than once every two weeks, unless another time period is specified in the Payments clause of this contract. For indefinite delivery type contracts, interim payment invoices shall be submitted no more than once every two weeks for each delivery order. There shall be a lapse of no more than 30 calendar days between performance and submission of an interim payment invoice.

(d) In addition to the information identified in the Prompt Payment clause herein, each invoice shall contain the following information, as applicable:

(1) Contract line item number (CLIN)

- (2) Subline item number (SLIN)
- (3) Accounting Classification Reference Number (ACRN)
- (4) Payment terms
- (5) Procuring activity
- (6) Date supplies provided or services performed
- (7) Costs incurred and allowable under the contract
- (8) Vessel (e.g., ship, submarine or other craft) or system for which supply/service is provided

(e) A DD Form 250, "Material Inspection and Receiving Report",

_____ is required with each invoice submittal.

 X is required only with the final invoice.

_____ is not required.

(f) The Contractor's final invoice shall be identified as such, and shall list all other invoices (if any) previously tendered under this contract.

* In contracts with the Canadian Commercial Corporation, substitute "Administrative Contracting Officer" for "contract auditor".

1.2 Submission of Invoices Direct to Payment Office

(a) Pursuant to DFARS 242.803(b)(1)(C), if the cognizant Government auditor has notified the contractor of its authorization to do so, the contractor may submit interim vouchers under this contract direct to the payment office shown in Block 12 of SF-26 instead of to the address shown in subparagraph (b) of section 1.1 above.

(b) Such authorization does not extend to the first and final vouchers. The contractor shall continue to submit first vouchers to the cognizant auditor shown in subparagraph (b) of section 1.1 above. The final voucher shall be submitted to the Administrative Contracting Officer (SF-26 block 6) with a copy to the cognizant auditor.

1.3 Payment Instructions for CLINs with Multiple ACRNs/Lines of Accounting

For all invoices submitted against CLINs with multiple Accounting Classification Reference Numbers (ACRNs), the billing shall be paid from the earliest Fiscal Year (FY) appropriation first (e.g., FYX0 funding shall be completely exhausted before any FYX1 funds are paid). In the event there are multiple ACRNs with the same FY of appropriation, billings shall be proportionally billed to all ACRNs for that FY in the same ratio that the ACRNs are obligated.

1.4 Payment of Allowable Costs and Fixed Fee

As consideration for the proper performance of the work and services required under this contract, the Contractor shall be paid as follows:

(a) Costs, as provided for under the contract clause entitled "Allowable Cost and Payment," shall not exceed the amount set forth as "Estimated Cost" in Section B, and is subject to the contract clause entitled "Limitation of Cost" or "Limitation of Funds" whichever is applicable.

(b) A fixed fee, in the amount set forth as 'Fixed Fee' in Section B, in accordance with the contract clause FAR 52.216-18 "Fixed Fee", shall be paid upon completion of the work and services required under this contract and upon final acceptance by the Contracting Officer. However, the Contractor, shall bill on each voucher the amount of the fee bearing the same percentage to the total fixed fee as the amount of cost billed bears to the total estimated cost not to exceed the amount set forth as "Estimated Cost" in Section B. The total fixed fee billed, shall not exceed the total fixed fee specified in Section B and is subject to the contract clause entitled "Limitation of Cost" or "Limitation of Funds" whichever applies.

(c) In accordance with FAR 52.216-8, and in order to protect the Government's interest, the Contractor is hereby directed to withhold 10% of the fixed fee amount as set forth in Section B or until a reserve is set aside in the amount of \$100,000, whichever is less. The Administrative Contracting Officer shall release 75% of the fixed fee reserve upon acceptance of the final deliverables identified in Section F of this contract. The remainder 25% of the fixed fee reserve will be released after completion of any final audits, submission of the final patent and royalty reports and if the contractor is not delinquent in submitting final vouchers for prior years' settlements.

1.5 Allotment of Funds

(a) It is hereby understood and agreed that this contract will not exceed a total amount of \$1,305,009.00; including an estimated cost of \$1,208,342.00 and a fixed fee of \$96,667.00.

(b) The total amount presently available for payment and allotted to CLIN 0001 of this contract is \$625,904.00; including an estimated cost of \$579,541.00 and a fixed fee of \$46,363.00. It is estimated that the amount allotted of \$625,904.00 will cover the period from date of award through 31 Dec 2004.

2. PROCURING OFFICE REPRESENTATIVES

(a) In order to expedite administration of this contract, the Administrative Contracting Officer should direct inquiries to the appropriate office listed below. Please do not direct routine inquiries to the person listed in Item 20A on Standard Form 26.

Contract Negotiator – [REDACTED]

Inspection and Acceptance [REDACTED]
[REDACTED]

Security Matters [REDACTED]
[REDACTED]

Patent Matters [REDACTED]
[REDACTED]

(b) The Administrative Contracting Officer will forward invention disclosures and reports directly to Corporate Counsel (Code 00CC), Office of Naval Research, Department of the Navy, Ballston Tower One, 800 North Quincy Street, Arlington, Virginia 22217-5660. The Corporate Counsel will return the reports along with a recommendation to the Administrative Contracting Officer. The Corporate Counsel will represent the Contracting Officer with regard to invention reporting matters arising under this contract.

3. TYPE OF CONTRACT

This is a cost-plus-fixed-fee completion contract.

SECTION H - SPECIAL CONTRACT REQUIREMENTS

1. ONR 5252.235-9714 REPORT PREPARATION (FEB 2002)

Scientific or technical reports prepared by the Contractor and deliverable under the terms of this contract will be prepared in accordance with format requirements contained in ANSI/NISO Z39.18-1995, Scientific and Technical Reports: Elements, Organization, and Design.

[NOTE: All NISO American National Standards are available as free, downloadable pdf(s) at <http://www.niso.org/standards/index.html>. NISO standards can also be purchased in hardcopy form from NISO Press Fulfillment, P. O. Box 451, Annapolis Junction, MD 20701-0451 USA. Telephone U.S. and Canada: (877) 736-6476; Outside the U.S. and Canada: 301-362-6904 Fax: 301-206-9789.]

2. Invention Disclosures and Reports

The Contractor shall submit all invention disclosures and reports required by the Patent Rights clause of this contract to the Administrative Contracting Officer.

3. ONR 5252.237-9705 Key Personnel (DEC 88)

(a) The Contractor agrees to assign to the contract tasks those persons whose resumes were submitted with its proposal and who are necessary to fulfill the requirements of the contract as "key personnel". No substitutions may be made except in accordance with this clause.

(b) The Contractor understands that during the first ninety (90) days of the contract performance period, no personnel substitutions will be permitted unless these substitutions are unavoidable because of the incumbent's sudden illness, death or termination of employment. In any of these events, the Contractor shall promptly notify the Contracting Officer and provide the information described in paragraph (c)

below. After the initial ninety (90) day period the Contractor must submit to the Contracting Officer all proposed substitutions, in writing, at least 30 days in advance 60 days if security clearance must be obtained) of any proposed substitution and provide the information required by paragraph (c) below.

(c) Any request for substitution must include a detailed explanation of the circumstances necessitating the proposed substitution, a resume for the proposed substitute, and any other information requested by the Contracting Officer. Any proposed substitute must have qualifications equal to or superior to the qualifications of the incumbent. The Contracting Officer or his/her authorized representative will evaluate such requests and promptly notify the Contractor in writing of his/her approval or disapproval thereof.

(d) In the event that any of the identified key personnel cease to perform under the contract and the substitute is disapproved, the contract may be immediately terminated in accordance with the Termination clause of the contract.

The following are identified as key personnel:

Labor Category	First/M/Last Name
Principal Investigator	[REDACTED]

4. **ONR 5252.242-9718 TECHNICAL DIRECTION (FEB 2002)**

(a) Performance of the work hereunder is subject to the technical direction of the Program Officer/COR designated in this contract, or duly authorized representative. For the purposes of this clause, technical direction includes the following:

(1) Direction to the Contractor which shifts work emphasis between work areas or tasks, requires pursuit of certain lines of inquiry, fills in details or otherwise serves to accomplish the objectives described in the statement of work;

(2) Guidelines to the Contractor which assist in the interpretation of drawings, specifications or technical portions of work description.

(b) Technical direction must be within the general scope of work stated in the contract. Technical direction may not be used to:

- (1) Assign additional work under the contract;
- (2) Direct a change as defined in the contract clause entitled "Changes";
- (3) Increase or decrease the estimated contract cost, the fixed fee, or the time required for contract performance; or
- (4) Change any of the terms, conditions or specifications of the contract.

(c) The only individual authorized to in any way amend or modify any of the terms of this contract shall be the Contracting Officer. When, in the opinion of the Contractor, any technical direction calls for effort outside the scope of the contract or inconsistent with this special provision, the Contractor shall notify the Contracting Officer in writing within ten working days after its receipt. The Contractor shall not proceed with the work affected by the technical direction until the Contractor is notified by the

Contracting Officer that the technical direction is within the scope of the contract.

(d) Nothing in the foregoing paragraphs may be construed to excuse the Contractor from performing that portion of the work statement which is not affected by the disputed technical direction.

SECTION I - CONTRACT CLAUSES (15 MAR 2004)

COST-PLUS-FIXED-FEE

(A) FAR 52.252-02 CLAUSES INCORPORATED BY REFERENCE (FEB 1998)

This contract incorporates one or more clauses by reference, with the same force and effect as if they were given in full text. Upon request, the Contracting Officer will make their full text available. Also, the full text of a clause may be accessed electronically at these addresses:

<http://www.arnet.gov/far/>

http://farsite.hill.af.mil/farsite_script.html

For instance, a dollar threshold may trigger the applicability of the clause or a certain condition of the research may trigger the applicability of the clause. In order to provide some assistance, as to when a dollar threshold triggers a clause, we have associated certain symbols with dollar thresholds. The symbols and their appropriate dollar thresholds are as follows:

- * Applies when contract action exceeds \$10,000
- ** Applies when contract action exceeds \$100,000
- + Applies when contract action exceeds \$500,000
- ++ Applies when contract action exceeds \$500,000 and subcontracting possibilities exist. Small Business Exempt.
- x (DD 250)
- xx Not applicable

I. FEDERAL ACQUISITION REGULATION (FAR) (48 CFR CHAPTER 1) CLAUSES:

**	FAR 52.202-1	Definitions (DEC 2001)
**	FAR 52.203-3	Gratuities (APR 1984)
**	FAR 52.203-5	Covenant Against Contingent Fees (APR 1984)
**	FAR 52.203-6	Restrictions on Subcontractor Sales to the Government (JUL 1995)
**	FAR 52.203-7	Anti-Kickback Procedures (JUL 1995)
**	FAR 52.203-8	Cancellation, Rescission, and Recovery of Funds for Illegal or Improper Activity (JAN 1997)
**	FAR 52.203-10	Price or Fee Adjustment for Illegal or Improper Activity (JAN 1997)
**	FAR 52.203-12	Limitation on Payments to Influence Certain Federal Transactions (JUN 2003)
**	FAR 52.204-4	Printing/Copying Double-Sided on Recycled Paper (AUG 2000)
	FAR 52.204-7	Central Contractor Registration (OCT 2003)
	FAR 52.211-15	Defense Priority and Allocation Requirements (SEP 1990)

**	FAR 52.215-2	Audit and Records - Negotiation (JUN 1999) and Alternate II (APR 1998) (Alternate II is only applicable with cost reimbursement contracts with State and local Governments, educational institutions, and other non-profit organizations.)
	FAR 52.215-8	Order of Precedence - Uniform Contract Format (OCT 1997)
+	FAR 52.215-10	Price Reduction for the Defective Cost or Pricing Data (OCT 1997) (The clause is applicable to subcontracts over \$550,000.)
+	FAR 52.215-12	Subcontractor Cost or Pricing Data (OCT 1997) (Applicable to subcontracts over \$550,000 only)
**	FAR 52.215-14	Integrity of Unit Prices (OCT 1997) and Alternate I (OCT 1997) (Alternate I is applicable if the action is contracted under Other Than Full and Open Competition)
+	FAR 52.215-15	Pension Adjustments and Asset Reversions (DEC 1998)
+	FAR 52.215-18	Reversion or Adjustment of Plans for Postretirement Benefits (PRB) Other than Pensions (OCT 1997)
+	FAR 52.215-19	Notification of Ownership Changes (OCT 1997) (Applicable when Cost or Pricing Data is required)
	FAR 52.216-7	Allowable Cost and Payment (DEC 2002)
	FAR 52.216-8	Fixed Fee (MAR 1997)
**	FAR 52.219-4	Notice of Price Evaluation Preference for HUBzone Small Business Concerns (JAN 1999)
**	FAR 52.219-8	Utilization of Small Business Concerns (OCT 2000)
++	FAR 52.219-9	Small Business Subcontracting Plan (JAN 2002)
++	FAR 52.219-16	Liquidated Damages - Subcontracting Plan (JAN 1999)
	FAR 52.222-1	Notice to the Government of Labor Disputes (FEB 1997)
**	FAR 52.222-2	Payment for Overtime Premiums (JUL 1990) (Note: The word "zero" is inserted in the blank space indicated by an asterisk)
	FAR 52.222-3	Convict Labor (JUN 2003) (Reserved when FAR 52.222-20 Walsh Healy Public Contracts Act is applicable)
**	FAR 52.222-4	Contract Work Hours and Safety Standards Act - Overtime Compensation (SEP 2000)
	FAR 52.222-21	Prohibition of Segregated Facilities (FEB 1999)
	FAR 52.222-26	Equal Opportunity (APR 2002)
*	FAR 52.222-35	Equal Opportunity for Special Disabled Veterans, Veterans of the Vietnam Era, and Other Eligible Veterans (DEC 2001)
*	FAR 52.222-36	Affirmative Action for Workers with Disabilities (JUN 1998)
*	FAR 52.222-37	Employment Reports on Special Disabled Veterans, Veterans of the Vietnam Era, and Other Eligible Veterans (DEC 2001)
**	FAR 52.223-14	Toxic Chemical Release Reporting (AUG 2003)
	FAR 52.225-13	Restrictions on Certain Foreign Purchases (JAN 2004)
**	FAR 52.227-1	Authorization and Consent (JUL 1995)

**	FAR 52.227-2	Notice and Assistance Regarding Patent and Copyright Infringement (AUG 1996)
	FAR 52.228-7	Insurance Liability to Third Persons (MAR 1996) (Further to paragraph (a)(3), unless otherwise stated in this contract, types and limits of insurance required are as stated in FAR 28.307-2)
	FAR 52.232-9	Limitation on Withholding of Payments (APR 1984)
**	FAR 52.232-17	Interest (JUN 1996)
	FAR 52.232-23	Assignment of Claims (JAN 1986) and Alternate I (APR 1984)
	FAR 52.232-25	Prompt Payment (OCT 2003) and Alternate I (FEB 2002) (The words "the 30 th day" are inserted in lieu of "the 7 th day" at (a) (5) (i). [When Alternate I is applicable (a)(5)(i) does not apply] [Alternate I applies when awarding a cost reimbursement contract for services]
	FAR 52.232-33	Payment by Electronic Funds Transfer - Central Contractor Registration (OCT 2003)
	FAR 52.233-1	Disputes (JULY 2002)
	FAR 52.233-3	Protest After Award (AUG 1996) and Alternate I (JUN 1985)
	FAR 52.242-1	Notice of Intent to Disallow Costs (APR. 1984)
+	FAR 52.242-3	Penalties for Unallowable Costs (MAY 2001)
	FAR 52.242-4	Certification of Final Indirect Costs (JAN 1997)
**	FAR 52.242-13	Bankruptcy (JUL 1995)
	FAR 52.242-15	Stop Work Order (AUG 1989) and Alternate I (APR 1984)
	FAR 52.244-2	Subcontracts (AUG 1998) and Alternate I (AUG 1998) [Insert in cost-reimbursement contracts, and letter, time-and-material, and labor-hour contracts exceeding SAP, and fixed price contracts exceeding SAP where unpriced actions are anticipated. Use Alternate I for cost-reimbursement contracts]
**	FAR 52.244-5	Competition in Subcontracting (DEC 1996)
	FAR 52.244-6	Subcontracts for Commercial Items and Commercial Components (APR 2003)
	FAR 52.245-5	Government Property (Cost-Reimbursement, Time-and-Materials, or Labor-Hour Contracts) (JUN 2003) and ALT I (JUN 2003) (As modified by DoD Class Deviation 99-00008 dated 13 July 1999) (ALT I is applicable if the contractor is a nonprofit organization whose primary purpose is the conduct of scientific research)
**	FAR 52.247-64	Preference for Privately Owned U.S. Flag Commercial Vessels (APR 2003)
	FAR 52.249-6	Termination (Cost-Reimbursement) (SEP 1996)

	FAR 52.249-14	Excusable Delays (APR 1984)
	FAR 52.251-1	Government Supply Sources (APR 1984)
	FAR 52.253-1	Computer Generated Forms (JAN 1991)

II. DEPARTMENT OF DEFENSE FAR SUPPLEMENTAL (DFARS) (48 CFR CHAPTER 2)
CLAUSES:

**	DFARS 252.203-7001	Prohibition On Persons Convicted of Fraud or Other Defense-Contract-Related Felonies (MAR 1999)
	DFARS 252.204-7003	Control of Government Work Product (APR 1992)
	DFARS 252.204-7004	Alternate A (NOV 2003)
**	DFARS 252.209-7000	Acquisition from Subcontractors subject to On-Site Inspection under the Intermediate Range Nuclear Forces (INF) Treaty (NOV 1995)
**	DFARS 252.209-7004	Subcontracting with Firms That Are Owned or Controlled by the Government of a Terrorist Country (MAR 1998)
+	DFARS 252.215-7000	Pricing Adjustments (DEC 1991)
++	DFARS 252.219-7003	Small, Small Disadvantaged and Women-owned Small Business Subcontracting Plan (DoD Contracts) (APR 1996)
	DFARS 252.225-7004	REPORTING OF CONTRACT PERFORMANCE OUTSIDE THE UNITED STATES (APR 2003)
**	DFARS 252.225-7012	Preference for Certain Domestic Commodities (FEB 2003)
	DFARS 252.225-7031	Secondary Arab Boycott of Israel (APR 2003)
	DFARS 252.227-7013	Rights in Technical Data – Noncommercial Items (NOV 1995), and Alternate I (JUN 1995)
	DFARS 252.227-7014	Rights In Noncommercial Computer Software and Noncommercial Computer Software Documentation (JUN 1995)
	DFARS 252.227-7016	Rights in Bid or Proposal Information (JUN 1995)
	DFARS 252.227-7019	Validation of Asserted Restrictions – Computer Software (JUN 1995)
	DFARS 252.227-7025	Limitations on the Use or Disclosure of Government-Furnished Information Marked with Restrictive Legends (JUN 1995)
	DFARS 252.227-7028	Technical Data or Computer Software Previously Delivered to the Government (JUN 1995)
	DFARS 252.227-7030	Technical Data – Withholding of Payment (MAR 2000)
	DFARS 252.227-7036	Declaration of Technical Data Conformity (JAN 1997)
	DFARS 252.227-7037	Validation of Restrictive Markings on Technical Data (SEP 1999)
	DFARS 252.231-7000	Supplemental Cost Principles (DEC 1991)
	DFARS 252.232-7003	Electronic Submissions of Payment Requests (MAR 2003)
	DFARS 252.242-7000	Post-Award Conference (DEC 1991)
**	DFARS 252.243-7002	Requests for Equitable Adjustment (MAR 1998)

	DFARS 252.245-7001	Reports of Government Property (MAY 1994)
X	DFARS 252.246-7000	Material Inspection and Receiving Report (MAR 2003)
**	DFARS 252.247-7023	Transportation of Supplies by Sea (MAY 2002)
**	DFARS 252.247-7024	Notification Of Transportation Of Supplies By Sea (MAR 2000) (Applicable when the Contractor has made a negative response to the inquiry in the representation at DFARS 252.247-7022.)
	DFARS 252.251-7000	Ordering from Government Supply Sources (OCT 2002)

(B) ADDITIONAL FAR AND DFARS CLAUSES

This contract incorporates one or more clauses by reference as indicated by the mark of (X), with the same force and effect as if they were given in full text. Upon request, the Contracting Officer will make their full text available. Also, the full text of a clause may be accessed electronically at this address: <http://www.arnet.gov/far/>

	FAR 52.204-2	Security Requirements (AUG 1996) (Applicable if contract will generate or require access to classified information and DD Form 254, Contract Security Classification Specification, is issued to the contractor)
X	FAR 52.209-6	Protecting the Government's Interest when Subcontracting with Contractors Debarred, Suspended, or Proposed for Debarment (JUL 1995) (Applicable to contracts exceeding \$25,000 in value.)
X	FAR 52.215-17	Waiver of Facilities Capital Cost of Money (OCT 1997) (Applicable if the Contractor did not propose facilities capital cost of money in the offer)
X	FAR 52.215-21	Requirements for Cost or Pricing Data or Information Other Than Cost or Pricing Data - Modifications (OCT 1997) (Applicable to 'contracts' if cost or pricing data or information other than cost or pricing data will be required for modifications)
	FAR 52.217-9	Option to Extend the Term of the Contract (MAR 2000) (In paragraph (a), insert "XX", and in paragraph (c), insert "XX") (Applicable if contract contains line item(s) for option(s)) (Complete the spaces in parentheses)
	FAR 52.219-3	Notice of Total HUBZone Set-Aside (JAN 1999)
	FAR 52.219-5	Very Small Business Set-Aside (JUN 2003) (For actions between \$2,500 and \$50,000)
	FAR 52.219-6	Notice of Total Small Business Set-Aside (JUN 2003), and Alternate I (OCT 1995) (Applicable to total small business set-asides, including SBIR)
	FAR 52.219-7	Notice of Partial Small Business Set-Aside (JUN 2003) and Alternate I (OCT 1995)
	FAR 52.219-10	Incentive Subcontracting Program (OCT 2001) (Applicable at the PCO's discretion to contract actions exceeding \$500,000 and when subcontracting possibilities exist. The clause is small business exempt) (In paragraph (b), insert the appropriate number between 0 and 10 - "XX") (Complete the space in the parentheses)

	FAR 52.219-25	Small Disadvantaged Business Participation Program - Disadvantaged Status and Reporting (OCT 1999) (Applicable if contract includes FAR 52.219-24)
	FAR 52.219-26	Small Disadvantaged Business Participation Program - Incentive Subcontracting Program (OCT 2000) (Applicable at the PCO's discretion to contract actions exceeding \$500,000 and when subcontracting possibilities exist. The clause is small business exempt) (In paragraph (b), insert the appropriate number between 0 and 10 - "XX") (Complete the space in the parentheses)
X	FAR 52.222-20	Walsh Healy Public Contracts Act (DEC 1996) (Applicable if the contract includes deliverable materials, supplies, articles or equipment in an amount that exceeds or may exceed \$10,000)
X	FAR 52.223-5	Pollution Prevention and Right-to-Know Information (AUG 2003) (Applicable if contract provides for performance, in whole or in part, on a Federal facility)
X	FAR 52.223-6	Drug-Free Workplace (MAY 2001) (Applies when contract action exceeds \$100,000 or at any value when the contract is awarded to an individual)
	FAR 52.230-2	Cost Accounting Standards (APR 1998) (Applicable when contract amount is over \$500,000, if contractor is subject to full CAS coverage, as set forth in 48 CFR Chapter 99, Subpart 9903.201-2(a) (FAR Appendix B)
	FAR 52.230-3	Disclosure and Consistency of Cost Accounting Practices (APR 1998) (Applicable when contract amount is over \$500,000 but less than \$25 million, and the offeror certifies it is eligible for and elects to use modified CAS coverage as set forth in 48 CFR Chapter 99, Subpart 9903.201-2 (FAR Appendix B)
	FAR 52.230-6	Administration of Cost Accounting Standards (NOV 1999) (Applicable if contract is subject to either clause at FAR 52.230-2, FAR 52.230-3 or FAR 52.230-5)
X	FAR 52.232-20	Limitation of Cost (APR 1984) (Applicable only when contract action is fully funded)
X	FAR 52.232-22	Limitation of Funds (APR 1984) (Applicable only when contract action is incrementally funded)
	FAR 52.239-1	Privacy or Security Safeguards (AUG 1996) (Applicable to contracts for information technology which require security of information technology, and/or are for the design, development, or operation of a system of records using commercial information technology services or support services.)
	FAR 52.245-18	Special Test Equipment (FEB 1993) Applicable when it is anticipated that the contractor will acquire or fabricate special test equipment but the exact identification of the equipment is not known)

	DFARS 252.203-7002	Display of DoD Hotline Poster (DEC 1991) (Applicable only when contract action exceeds \$5 million or when any modification increases contract amount to more than \$5 million)
	DFARS 252.204-7000	Disclosure of Information (DEC 1991) (Applies when Contractor will have access to or generate unclassified information that may be sensitive and inappropriate for release to the public)
	DFARS 252.204-7005	Oral Attestation of Security Responsibilities (NOV 2001) (Applicable if FAR 52.204-2, Security Requirements Applies)
X	DFARS 252.205-7000	Provision of Information to Cooperative Agreement Holders (DEC 1991) (Applicable only when contract action exceeds \$500,000 or when any modification increases total contract amount to more than \$500,000)
X	DFARS 252.215-7002	Cost Estimating System requirements (Oct 1998) (Applicable only to contract actions awarded on the basis of certified cost or pricing data)
	DFARS 252.223-7004	Drug-Free Work Force (SEP 1988) (Applicable (a) if contract involves access to classified information: or (b) when the Contracting Officer determines that the clause is necessary for reasons of national security or for the purpose of protecting the health or safety of performance of the contract.
X	DFARS 252.223-7006	Prohibition on Storage and Disposal of Toxic and Hazardous Materials (APR 1993) (Applicable if work requires, may require, or permits contractor performance on a DoD installation)
	DFARS 252.225-7001	Buy American Act and Balance of Payments Program (APR 2003) (Applicable if the contract includes deliverable supplies) (This clause does not apply if an exception to the Buy American Act or Balance of Payments Program is known or if using the clause at 252.225-7021, or 252.225-7036.)
	DFARS 252.225-7002	Qualifying Country Sources as Subcontractors (APR 2003) (Applicable when clause at DFARS 252.225-7001, 252.227-7021, or 252.227-7036 applies)
	DFARS 252.225-7016	Restriction On Acquisition Of Ball And Roller Bearings (APR 2003) (Applicable if contract includes deliverable supplies, unless Contracting Officer knows that items being acquired do not contain ball or roller bearings)
	DFARS 252.226-7001	Utilization of Indian Organizations and Indian-Owned Economic Enterprises (SEP 2001) [(Applicable if FAR Part 12 is not used, and for supplies and services (but not R&D) expected to exceed SAP thresholds) (This Final Rule replaces FAR 52.226-1 (JUN 2000) via DFARS Chg Ntc 20020531]

	DFARS 252.227-7018	Rights in Noncommercial Technical Data and Computer Software – Small Business Innovation Research (SBIR) Program (JUN 1995)
	DFARS 252.242-7004	Material Management and Accounting System (DEC 2000) (Applicable to contract actions exceeding \$100,000) (Not applicable for contracts awarded to small businesses, educational institutions, or nonprofit organizations)

(C) COST-PLUS-FIXED-FEE-RESEARCH AND DEVELOPMENT CLAUSES

The following FAR and DFARS clauses apply to Cost-Plus-Fixed-Fee Research and Development Contracts and are either required by regulation or are required when the circumstances of the contract warrant that they apply: (** - applies to contract actions exceeding \$100,000)

	FAR 52.225-16	Sanctioned European Union Country Services (FEB 2000)
**	FAR 52.227-1	Authorization and Consent (JUL 1995) and Alternate I (APR 1984)
	FAR 52.243-2	Changes – Cost Reimbursement (AUG 1987) and Alternate V (APR 1984)
	FAR 52.246-9	Inspection of Research and Development (Short Form) (APR 1984)
	FAR 52.246-23	Limitation of Liability (FEB 1997)
	DFARS 252.235-7002	Animal Welfare (DEC 1991)
	DFARS 252.235-7011	Final Scientific or Technical Report (SEP 1999)

The following FAR and DFARS clauses for Cost-Plus-Fixed-Fee Research and Development Contracts only apply when specifically marked with a check (x):

	FAR 52.227-10	Filing of Patent Applications – Classified Subject Matter (APR 1984) (Applicable if contract is subject to FAR clause 52.204-02 and either 52.227-11 or 52.227-12)
X	FAR 52.227-11	Patent Rights – Retention by the Contractor (Short Form) (JUN 1997) (Applicable if contractor is a small business or non profit organization)
	OR	
	FAR 52.227-12	Patent Rights – Retention by the Contractor (Long Form) (JAN 1997) (Applicable if contractor is a large business)
X	DFARS 252.227-7034	Patents – Subcontracts (APR 1984) (Applicable when FAR 52.227-11 applies)
X	DFARS 252.227-7039	Patents – Reporting of Subject Inventions (APR 1990)

	(Applied when FAR 52.227-11 applies)
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SECTION J - LIST OF ATTACHMENTS

1. EXHIBIT A, entitled "Contract Data Requirements List" (DD Form 1423) - 1 page with Enclosure Number 1, entitled "Contract Data Requirements List - Instructions for Distribution," 2 pages.
2. Attachment Number 1 entitled "Statement of Work" 4 pages
3. Attachment Number 2 entitled "Financial Accounting Data (FAD) sheet" 1 page

SECTION K - REPRESENTATIONS, CERTIFICATIONS AND OTHER STATEMENTS OF OFFEROR

1. The Contractor's Representations and Certifications, dated 19 Jan 2004 are hereby incorporated into this contract by reference.

CONTRACT DATA REQUIREMENTS LIST

Form Approved
OMB No. 0704-0188


Public reporting burden for this collection of information is estimated to average 440 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection or information, including suggestions for reducing this burden, to Washington Headquarters Services Directorate for information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302, and to the Office of Management and Budget Paperwork Reduction Project (0704-0188), Washington, DC 20503.

A. CONTRACT LINE ITEM NO. 0001				B. EXHIBIT A		C. CATEGORY TOP <input type="checkbox"/> TM <input type="checkbox"/> OTHER <input checked="" type="checkbox"/>			
D. SYSTEM/ITEM [REDACTED]				E. CONTRACT/PR NO. [REDACTED]		F. CONTRACTOR [REDACTED]			
1. DATA ITEM NO. A001		2. TITLE OF DATA ITEM Progress Reports			3. SUBTITLE				
4. AUTHORITY (Data Acquisition Document No.)			5. CONTRACT REFERENCE Section H.1 of Schedule			6. REQUIRING OFFICE See Section F			
7. DD 250 REQ LT*	9. DIST STATEMENT REQUIRED	10. FREQUENCY Quarterly	12. DATE OF FIRST SUBMISSION		14. DISTRIBUTION				
8. APP CODE		11. AS OF DATE *	13. DATE OF SUBSEQUENT SUBMISSION		ADDRESSEE		b. COPIES		
16. REMARKS *As required by the Program Officer, these reports, submitted periodically for the purpose of reporting progress, may be in the form of a letter report, or a technical report.					See Enclosure Number 1		Draft	Final	
								REQ	REPRO
15. TOTAL									
1. DATA ITEM NO. A002		2. TITLE OF DATA ITEM Final Report			3. SUBTITLE				
4. AUTHORITY (Data Acquisition Document No.)			5. CONTRACT REFERENCE Section H.1 of the Schedule			6. REQUIRING OFFICE See Section F			
7. DD 250 REQ DD *	9. DIST STATEMENT REQUIRED	10. FREQUENCY ONE	12. DATE OF FIRST SUBMISSION See Section F		14. DISTRIBUTION				
8. APP CODE		11. AS OF DATE See Section F	13. DATE OF SUBSEQUENT SUBMISSION		ADDRESSEE		b. COPIES		
16. REMARKS *DD250 required only for acceptance by the Program Officer designated in Section F. Information copies of this report shall be distributed in accordance with Enclosure Number 1.					See Enclosure Number 1		Draft	Final	
								REQ	REPRO
15. TOTAL									
1. DATA ITEM NO.		2. TITLE OF DATA ITEM			3. SUBTITLE				
4. AUTHORITY (Data Acquisition Document No.)			5. CONTRACT REFERENCE			6. REQUIRING OFFICE			
7. DD 250 REQ	9. DIST STATEMENT REQUIRED	10. FREQUENCY	12. DATE OF FIRST SUBMISSION		14. DISTRIBUTION				
8. APP CODE		11. AS OF DATE	13. DATE OF SUBSEQUENT SUBMISSION		ADDRESSEE		b. COPIES		
16. REMARKS					See Enclosure Number 1		Draft	Final	
								REQ	REPRO
15. TOTAL									
1. DATA ITEM NO.		2. TITLE OF DATA ITEM			3. SUBTITLE				
4. AUTHORITY (Data Acquisition Document No.)			5. CONTRACT REFERENCE			6. REQUIRING OFFICE			
7. DD 250 REQ	9. DIST STATEMENT REQUIRED	10. FREQUENCY	12. DATE OF FIRST SUBMISSION		14. DISTRIBUTION				
8. APP CODE		11. AS OF DATE	13. DATE OF SUBSEQUENT SUBMISSION		ADDRESSEE		b. COPIES		
16. REMARKS					See Enclosure Number 1		Draft	Final	
								REQ	REPRO
15. TOTAL									
1. DATA ITEM NO.		2. TITLE OF DATA ITEM			3. SUBTITLE				
4. AUTHORITY (Data Acquisition Document No.)			5. CONTRACT REFERENCE			6. REQUIRING OFFICE			
7. DD 250 REQ	9. DIST STATEMENT REQUIRED	10. FREQUENCY	12. DATE OF FIRST SUBMISSION		14. DISTRIBUTION				
8. APP CODE		11. AS OF DATE	13. DATE OF SUBSEQUENT SUBMISSION		ADDRESSEE		b. COPIES		
16. REMARKS					See Enclosure Number 1		Draft	Final	
								REQ	REPRO
15. TOTAL									
G. PREPARED BY Julie Green		H. DATE 23 Mar 2004		I. APPROVED BY 0252		J. DATE 23 Mar 2004			

ENCLOSURE NUMBER 1
CONTRACT DATA REQUIREMENTS LIST
INSTRUCTIONS FOR DISTRIBUTION

DISTRIBUTION OF TECHNICAL REPORTS AND FINAL REPORT

The minimum distribution of technical reports and the final report submitted in connection with this contract is as follows:

ADDRESSEE	DODAA D CODE	NUMBER OF COPIES	
		UNCLASSIFIED/ UNLIMITED	UNCLASSIFIED/LIMITED AND CLASSIFIED
Program Officer  E-Mail:	N00014	1	1
Administrative Contracting Officer*	S2206A	1	1
Director, Naval Research Lab Attn: Code 5227 4555 Overlook Avenue, SW Washington, D.C. 20375-5320 E-mail: reports@library.nrl.navy.mil	N00173	1	1
Defense Technical Information Center 8725 John J. Kingman Road STE 0944 Ft. Belvoir, VA 22060-6218 E-mail:	S47031	2	2

* Send only a copy of the transmittal letter to the Administrative Contracting Officer; do not send actual reports to the Administrative Contracting Officer.

ELECTRONIC SUBMISSIONS OF TECHNICAL REPORTS IS PREFERRED AND ENCOURAGED. ELECTRONIC SUBMISSION SHOULD BE SENT TO THE E-MAIL ADDRESSES PROVIDED IN THE ABOVE TABLE, HOWEVER PLEASE NOTE THE FOLLOWING:

- Only Unlimited/Unclassified document copies may be submitted by e-mail.
- Unclassified/Limited has restricted distribution and a classified document (whether in its entirety or partially) is to be distributed in accordance with classified material handling procedures.
- Electronic submission to DIRECTOR, NAVAL RESEARCH LAB, shall be unclassified/unlimited reports and 30 pages or less. If unclassified and more than 30 pages, hardcopies of reports must be mailed.
- Electronic submission to DTIC shall be unclassified/unlimited reports. If submission is for

limited documents, please send them in on a disk or sign up for DTIC's web-based document submission system at http://www.dtic.mil/dtic/submitting/elec_subm.html.

If the Program Officer directs, the Contractor shall make additional distribution of technical reports in accordance with a supplemental distribution list provided by the Program Officer.

DISTRIBUTION OF PROGRESS REPORTS, which are NOT, Technical Reports

The minimum distribution for reports that are not technical reports is as follows:

ADDRESSEE	DODAAD CODE	NUMBER OF COPIES	
		UNCLASSIFIED/ UNLIMITED	UNCLASSIFIED/LIMITED AND CLASSIFIED
Program Officer [REDACTED] E-Mail: [REDACTED]	N00014	1	1
Administrative Contracting Officer*	S2206A	1	1

*Send only a copy of the transmittal letter to the Administrative Contracting Officer; do not send actual reports to the Administrative Contracting Officer.

Attachment Number 1

Statement of Work

1. System Specification Study: We will participate in preliminary system design with an aim towards tailoring the sensors to be smoothly integrated with the core systems and platform.
2. Test Existing Platform (Reliant): We will conduct local trials to identify system-level engineering hurdles (e.g. acoustic interoperability, hydrodynamic stability, etc). *(currently funded effort)*
3. Demonstrate Existing Platform (Reliant): We will participate in and support an engineering sea-trial to test out the existing system. *(currently funded effort)*
4. Payload Design, Integrate VLF: We will use standard designs to the extent possible to tightly integrate the VLF payload in a standard Bluefin payload section.
5. Deliver Supplemental Hardware: To mitigate schedule and technical risk, we will provide an additional propulsion and energy section to be used for these efforts.
6. Trial New Platform: We will participate in technology demonstrations of this platform to provide ongoing support of CSS for ONR-NRL initiatives in FY03, FY04 and FY05.

System Specification Study

Our goals for the proposed development are to ensure that, once integration is complete, the VLF sonar and vehicle form a robust and compact system. By investing in a careful integration study at the outset, we will maximize the system performance and usability. As the first phase of this effort, we will participate in a system specification study to identify architectural level design considerations.

██████████ brings to this study extensive experience integrating high-performance sonars and other payloads. We will work hard to transfer our previous experience to the sonar developers to identify specifications and interface issues. Apart from the core vehicle systems common to all our vehicles, there are specific components that will be of value:

- Sonar Integration: ██████████ has already integrated commercial sonar sensors from EdgeTech, Klein and Reson, in addition to the CSS and Qinetiq SAS systems, Prof. Henrik Schmidt's Bi-Static Low Frequency arrays, and these preliminary efforts are being extended for the AOFNC 12.75" vehicles.
- Payload Packaging: Careful packaging can eliminate integration issues that might otherwise be intractable. For example, a pressure housing developed under the US/UK program provides features for registered mounting of external transducers and internal motion unit packages.
- Acoustic Interoperability: Several tests have shown that our shells have very low acoustic transmission losses over a wide range of frequencies, allowing internal placement of transducers (clearly this is something that would be payload sensor specific and would require rigorous testing to prove proper sensor performance). Interference from other AUV sensors and components is addressed through adjustment of subsystem spectral content, isolation, and synchronization.
- Modularity, Autonomy: We have designed the base system to allow for a wide variety of sensors to be utilized. We can provide isolated power of specific voltage to the sonar system should the need arise. Finally, we have experience with developing robust, capable AUV behaviors optimized to the properties of a particular payload.

Test Existing Platform (Reliant)

██████████ is already funded to do preliminary engineering trials with the existing VLF sonar package. We propose to build on the previously funded efforts to identify and clarify design hurdles specific to putting this payload on a system that would be usable in a fleet battle exercise. We will fully exploit the opportunity that exists to use a complete vehicle prototype to test out various items prior to embarking on detailed payload design. They include:

- We will undertake careful evaluations of the AUV self noise under different operational, particularly in the VLF bands. These measurements will tell us where to apply noise mitigation measures or shift the spectral content of subsystem noise.
- Beyond the modeling efforts of VCT, and the preliminary testing we will do under currently funded programs, we will further tune the dynamic control to ensure that the sonar system may work to its full potential. Based on the preliminary concepts forwarded by NRL, this task will include modifications to control surfaces, as well as re-tuning or re-writing the control software to optimize the vehicle dynamics for the VLF system.
- The prototype will allow our team to get some real-world experience operating the systems, which should lead to improvements in the operations and handling of the system. The next generation VLF payload should permit the AUV to be deployed in sea states up to Beaufort 3, from ships of opportunity. A better integrated sonar payload will go a long way towards meeting this goal, but some development will be required. Shipping containers, carts, lift points and ship-side equipment will have to be adapted to the specifics of this vehicle.
- The prototype will allow a range of software tools to be practiced, refined and augmented.

Demonstrate Existing Platform (Reliant)

██████████ will provide logistical and operational support for the demonstration cruises with changes subject to the mutual agreement of ONR and ██████████. ██████████ will provide ongoing engineering and at-sea support to ensure the efficient, safe operation of the vehicles for these trials. It is our understanding that CSS will be Science Lead on the field trials and will require their personnel to be fully trained to operate the vehicles in the field. We expect that we will be required to heavily support them in this effort for the first two years of this work, before formally transitioning the entire operation to them. Further, it is our experience that the 'shake-down' trials prior to demonstrations are difficult to schedule and very labor intensive—and should be conducted by ██████████ operational and engineering staff in local waters if at all possible.

Payload Design, Integrate VLF

██████████ will integrate the VLF receive array, projector and payload electronics housing into a standard ██████████ payload section, in a robust, compact and cost effective manner. We would suggest that ARL does the internal packaging of their electronics into a housing provided by ██████████. The prototype system that is currently under development has the transducer arrays exterior to the AUV hull. While acceptable for proof of concept demonstrations, this clearly has a detrimental impact on operations, maintenance, and hydrodynamic performance, and structural integrity.

We propose to improve the packaging of the system, to make it a more integral package. We will work with the sonar engineers on redesigning and repositioning the electronics, receiver and transducer elements so they fit inside a typical vehicle section to the extent possible. For this work, we expect to take advantage of the system specification study and design work already

performed under the US/UK program. For example, we have developed a pressure housing with external features for mounting and physical registration of sonar transducers. We will modify this housing and provide it with appropriate underwater connectors to ARL. They will be free to package the housing in whatever fashion they require, providing [REDACTED] with weight estimates and ensuring proper software handshaking and electrical compatibility.

By integrating the sensor into a standard flooded [REDACTED] section, the overall cost and complexity of the integration effort should be reduced.

- The MK48 bulkheads and housings are exceptionally costly, the hull penetrations required for the transmitter are leaky/risky, and the section will be significantly larger and heavier than required.
- By designing the electronics to fit into a more reasonable payload pressure vessel, we will pave the way to integrating it onto even smaller platforms.
- The resonance of the MK48 air cylinder pressure vessel is in the same frequency regime as the sensor.
- There would be a variety of options available to the AUV and sonar designer if a flooded section could be provided. Sonar backing materials could be an air filled cylinder, or syntactic foam, or a flooded hull section.
- We may be able to accurately work from within the shell—certainly for the projector, and probably for the receiver. We have had significant success running sonar systems from inside of the vehicle shells. This is something that allows a more robust, reliable, serviceable vehicle to be fielded.
- Repairs and spares should be far more cost effective and easily locatable.

It may be that the receiver array can not be packaged internal to a 21" tube, in which case we will work on alternative strategies such as a retractable/folding hydrophone array, selecting an optimal location, or designing low lift fairings for appendages. At a minimum, we would propose a low lift fairing for the array—one that is free to rotate about its axis. For operational considerations (launch and recovery), we would consider a retractable or folding hydrophone array—considering the cost of the elements, the cost of a simple activated hinge mechanism should not be prohibitive. If the hydrophone array can not be made compliant—we will design into the structure a breakable element to vibration-isolate the array and protect it in case of collision. We will explore the option of a towed system, rather than work through the destabilizing issues associated with a very large fin array.

Deliver Supplemental Hardware

As there are at least two different payloads under consideration, and a range of parties interested in using the platform, [REDACTED] will build and deliver a supplemental propulsion and energy package to mitigate schedule risk and to ensure crucial demonstrations are not delayed/canceled. Within the funding time line, the Odyssey III-style vehicles will be involved in CSS demonstrations of ATRP, AOFNC C/NA work and the BPAUV demonstration cycle. Building an additional propulsion/energy section has the additional benefit of facilitating joint efforts and allowing for future collaborative behavior (e.g. bi-static sonar work). This effort will require no engineering effort—we will duplicate the tail and energy section already designed, documented and provided to CSS and Qinetiq under the US/UK collaboration. As our aim is to reduce the coupling to other BPAUV-MCM and AOFNC activities, we can not commit to modifying these existing platforms, other than upgrading vehicle behaviors, algorithms and topside tools; and adding the internal communications/power network provided through the AOFNC development.

Trial New Platform

[REDACTED] will provide logistical and operational support as needed for the demonstration cruises with changes subject to the mutual agreement of ONR, the proposal partners and [REDACTED]. For the early trials, we would expect to support CSS in a more significant fashion (supplying four to five personnel). For the later trials, it is our intention to send only two or three personnel to provide operational and technical support. We will fully support CSS's role as Chief Scientist on these demonstrations, and will work closely with them until such time that we may formally transfer the operations of the vehicles.

FINANCIAL ACCOUNTING DATA SHEET - NAVY

1. CONTRACT NUMBER (CRITICAL)		2. SPIN (CRITICAL)		3. MOD (CRITICAL)		4. PR NUMBER		PAGE 1 OF 1					
N0001404C0064						04PR03395-00							
CLIN/SLIN	6. LINE OF ACCOUNTING								7.	AMOUNT (CRITICAL)	NAVY INTERNAL USE ONLY REF DOC/ACRN		
	A. ACRN (CRITICAL)	B. APPROPRIATION (CRITICAL)	C. SUBHEAD (CRITICAL)	D. OBJ CLA	E. PARM	F. RFM	G. SA	H. AAA (CRITICAL)				I. IT	J. PAA
	AA	1741319	W2DH	255	RA	329	0	068342	2D	000000	08208 000 0200	\$625,904.00	PR#04PR03395-00 FRC:202Q
											PAGE TOTAL		
											GRAND TOTAL		

COMPTROLLER APPROVAL:
FOR FISCAL DATA AND SIGNATURE
BY _____
DATE: _____

for COMPTROLLER, ONR CONTRACT REVIEWED